

WHAT IS CLAIMED'IS:

- 1 1. A thin-film semiconductor device comprising:  
a first plurality of thin-film transistors having different driving voltages than a second  
plurality of thin-film transistors, wherein said first and second plurality of transistors are  
formed on a glass substrate,  
5 wherein an electric field of a gate electrode at each of said driving voltages of said first  
and second plurality of thin-film transistors is in a range of about 1MV/cm to 2MV/cm, and a  
drain concentration of P-type thin-film transistors is in a range of about  $3E+19/cm^3$  to  
 $1E+20/cm^3$ .
- 10 2. The thin-film semiconductor device according to claim 1,  
wherein said first plurality of thin-film transistors comprising N-type and P-type thin-  
film transistors have a lower driving voltage than said second plurality of thin-film transistors  
comprising N-type and P-type thin film transistor.
- 15 3. The thin-film semiconductor device according to claim 1,  
wherein a plurality of gate insulating films of said first and second plurality of thin-  
film transistors have substantially the same thickness.
4. The thin-film semiconductor device according to claim 2,  
20 wherein at least one N-type thin-film transistor of said second plurality of thin-film  
transistors have a lightly-doped drain structure.
5. A thin-film semiconductor device comprising:  
a first plurality of thin-film transistors having different driving voltages than a second  
25 plurality of thin-film transistors, wherein said first and second plurality of transistors are  
formed on a glass substrate,  
wherein an electric field of a gate electrode at each of said driving voltages of said first  
and second plurality of thin-film transistors is in a range of about 0.2MV/cm to 0.8MV/cm,  
and a drain concentration of P-type thin-film transistors is in a range of about  $3E+19/cm^3$  to  
30  $1E+20/cm^3$ .
6. The thin-film semiconductor device according to claim 5,  
wherein said first and second plurality of thin-film transistors comprising N-type and  
P-type thin-film transistors have a lower driving voltage than said second plurality of thin-film  
35 transistors comprising N-type and P-type thin film transistor.
7. The thin-film semiconductor device according to claim 5,  
wherein a plurality of gate insulating films of said first and second plurality of thin-  
film transistors has substantially the same thickness.  
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8. The thin-film semiconductor device according to claim 6,  
wherein at least one N-type thin-film transistor of said second plurality of thin-film  
transistors have a lightly-doped drain structure.

- 1 9. A thin-film semiconductor device comprising:  
a first plurality of thin-film transistors having a driving voltage which is lower than a  
driving range of a second plurality of thin-film transistors, wherein said first and second  
plurality of thin-film transistors are formed on a glass substrate,  
5 wherein a drain concentration of said first and second plurality of thin-film transistors  
is in a range of about  $3\text{E}+19/\text{cm}^3$  to  $1\text{E}+20/\text{cm}^3$ .
- 10 10. The thin-film semiconductor device according to claim 9,  
wherein a plurality of gate insulating films of said first and second plurality of thin-  
film transistors have substantially the same thickness.
- 15 11. The thin-film semiconductor device according to claim 9,  
wherein said first and second plurality of thin-film transistors comprise N-type and P-  
type thin-film transistors.
12. The thin-film semiconductor device according to claim 9,  
wherein gate insulating films of said first and second plurality of thin-film transistors  
are formed of substantially the same materials.
- 20 13. A liquid crystal display comprising:  
a thin-film semiconductor device according to claim 1; and  
a driver circuit.
- 25 14. A liquid crystal display comprising:  
a thin-film semiconductor device according to claim 9; and  
a driver circuit.
- 30 15. A thin-film semiconductor device manufacturing method comprising:  
providing a glass substrate  
forming a plurality of gate insulating films of a plurality of thin-film transistors,  
wherein said gate insulating films are formed so as to have a substantially the same thickness,  
and  
wherein said plurality of thin-film transistors have different driving voltages.
- 35 16. The thin-film semiconductor device manufacturing method according to claim 15,  
wherein said gate insulating films are formed at substantially the same time.
- 40 17. The thin-film semiconductor device manufacturing method according to claim 15,  
further comprising:  
forming source/drain regions of a plurality of P-type thin-film transistors having  
different driving voltages.
18. The thin-film semiconductor device manufacturing method according to claim 15,  
further comprising:

- 1            forming source/drain regions of a plurality of N-type thin-film transistors having  
different driving voltages.
19.    The thin-film semiconductor device manufacturing method according to claim 17,  
5        wherein said source/drain regions are formed at substantially the same time.
20.    The thin-film semiconductor device manufacturing method according to claim 18,  
      wherein said source/drain regions are formed at substantially the same time.
- 10    21.    The thin-film semiconductor device manufacturing method according to claim 18,  
      further comprising:  
          forming Lightly-doped drain structure on at least one part of the N-type thin-film  
transistors.